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☐ 1. Document ID: US 20020196962 A1

L3: Entry 1 of 84

File: PGPB

Dec 26, 2002

DOCUMENT-IDENTIFIER: US 20020196962 A1

TITLE: Image surveillance apparatus, image surveillance method, and image surveillance processing program

Current US Classification, US Primary Class/Subclass (1):  
382/103Detail Description Paragraph (103):

[0142] According to the above-described operations, with a single image surveillance apparatus, any desired region in an omniazimuthal view field image obtained by an omniazimuthal camera of the image surveillance apparatus can be set as a surveillance region. In the case where an object to be examined is detected in the surveillance region, image conversion can be performed in a smooth manner so that a perspective converted image or the like is obtained. Furthermore, according to the present invention, there is provided a plurality of background images for comparison with a current image. Thus, an undesired influence caused by a variation in the background of an image is reduced, and accordingly, detection accuracy for detecting an object to be examined is improved.

Detail Description Paragraph (105):

[0144] Furthermore, in the case where an object to be examined is detected, an image processing section performs image conversion so as to generate a perspective converted image including the object to be examined. With such a perspective image, the object can be examined readily and smoothly. Further still, since detection of an abnormal event is performed based on a comparison between a plurality of background images and a current image, an undesired influence caused by a variation in the backgrounds of the images is reduced, and accordingly, detection accuracy for detecting an object to be examined is improved.

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw Desc	Image
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☐ 2. Document ID: US 20020191825 A1

L3: Entry 2 of 84

File: PGPB

Dec 19, 2002

DOCUMENT-IDENTIFIER: US 20020191825 A1

TITLE: Computer-assisted methods and apparatus for identification and characterization of biomolecules in a biological sample

Current US Classification, US Primary Class/Subclass (1):  
382/128Detail Description Paragraph (25):

[0034] It is desirable to provide one or more reference points, detectable by the imaging device, for use in determining the x,y, coordinates of any features detected in the two-dimensional array of separated proteins. Reference points can be provided

on a support (e.g. a functionalized generally planar glass surface) to which a gel is covalently attached. Alternatively, reference points can be provided on a frame to which a gel is fixed during imaging; a matching frame can be provided in a robotic isolation device.

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWMC	Draw Desc	Image
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☐ 3. Document ID: US 20020186874 A1

L3: Entry 3 of 84

File: PGPB

Dec 12, 2002

DOCUMENT-IDENTIFIER: US 20020186874 A1

TITLE: METHOD AND MEANS FOR IMAGE SEGMENTATION IN FLUORESCENCE SCANNING CYTOMETRY

Current US Classification, US Primary Class/Subclass (1):  
382/133

Current US Classification, US Secondary Class/Subclass (1):  
382/173

Current US Classification, US Secondary Class/Subclass (2):  
382/261

Detail Description Paragraph (22):

[0060] Real-time histogram and feature extraction capabilities of the image processor 110 (FIG. 1) are important for timely operation of the cytometer 100. The histogram array (not shown), generated by the HF 134 in histogram mode, is an array containing the number of pixels in the image at each intensity (e.g., for an 8-bit pixel, gray-scale image, the intensity range is 0, representing minimum intensity, to 255, representing maximum intensity). The histogram can be used for intensity statistics. For example, obtaining the average and standard deviation in the image for the purpose of autofocus. In feature extraction mode, the HF 134 provides an organized array of all pixels at defined sets of intensities. As will be further discussed below, the groups of pixels or "streaks" are compressed by the HF 134 using the well-known method of run-length encoding (RLE). The Series 151 is programmed by writing to registers on the processing boards. A set of higher level routines is provided by the Series 151 Library.

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWMC	Draw Desc	Image
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☐ 4. Document ID: US 20020159627 A1

L3: Entry 4 of 84

File: PGPB

Oct 31, 2002

DOCUMENT-IDENTIFIER: US 20020159627 A1

TITLE: Object finder for photographic images

Current US Classification, US Primary Class/Subclass (1):  
382/154

Detail Description Paragraph (5):

[0050] The object finder computer 22 may be, e.g., a personal computer (PC), a graphics workstation, or a computer chip embedded as part of a machine or mechanism (e.g., a computer chip embedded in a digital camera, in a traffic control device, etc.). Similarly, the computer (not shown) at the remote client site 28 may also be

capable of viewing and manipulating digital image files transmitted by the object finder terminal 22. In one embodiment, as noted hereinbefore, the client computer site 28 may also include the object finder terminal 22, which can function as a server computer and can be accessed by other computers at the client site 28 via a LAN. Each computer--the object finder computer 22 and the remote computer (not shown) at the client site 28--may include requisite data storage capability in the form of one or more volatile and non-volatile memory modules. The memory modules may include RAM (random access memory), ROM (read only memory) and HDD (hard disk drive) storage. Memory storage is desirable in view of sophisticated image processing and graphics display performed by the object finder terminal 22 as part of the object detection process.

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWIC	Draw Desc	Image
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☐ 5. Document ID: US 20020154791 A1

L3: Entry 5 of 84

File: PGPB

Oct 24, 2002

DOCUMENT-IDENTIFIER: US 20020154791 A1

TITLE: Image monitoring method, image monitoring apparatus and storage media

Current US Classification, US Primary Class/Subclass (1):  
382/103

Current US Classification, US Secondary Class/Subclass (1):  
382/199

Summary of Invention Paragraph (11):

[0009] It must also be noted that the image monitoring apparatus of the present invention is desirably arranged so that it further has a tracking data calculation unit for tracking of an abnormal object as detected by the object judging unit, and an image capture device controller for generating and outputting based on the tracking data an image capture device-use control signal for changing an angle of an optical axis of the image capturing device. With such an arrangement, it is possible to automatically capture or "photograph" a scene in which the detected abnormal object is being tracked.

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWIC	Draw Desc	Image
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☐ 6. Document ID: US 20020146178 A1

L3: Entry 6 of 84

File: PGPB

Oct 10, 2002

DOCUMENT-IDENTIFIER: US 20020146178 A1

TITLE: System and method for fingerprint image enhancement using partitioned least-squared filters

Current US Classification, US Primary Class/Subclass (1):  
382/254

Summary of Invention Paragraph (8):

[0006] An ideal sensed or scanned fingerprint image is characterized by smoothly flowing patterns of distinct ridges and valleys. There are two prevalent and well accepted classes of fingerprint features arising from local ridge discontinuities (also known as minutiae): (1) ridge endings and (2) ridge bifurcations. Feature

matching is accomplished by comparing the global and/or local distributions of the minutiae properties. Often, the imaging limitations, acquisition condition, age, maintenance of the original impression, as well as skin characteristics cause the acquired image to be far from ideal fingerprints. It is, therefore, desirable to enhance the sensed image, and ensure proper performance of the successive feature extraction and matching modules.

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWIC	Draw Desc	Image
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☐ 7. Document ID: US 20020136453 A1

L3: Entry 7 of 84

File: PGPB

Sep 26, 2002

DOCUMENT-IDENTIFIER: US 20020136453 A1

TITLE: Automatic coloring of pixels exposed during manipulation of image regions

Current US Classification, US Primary Class/Subclass (1):  
382/166

Current US Classification, US Secondary Class/Subclass (1):  
382/262

Summary of Invention Paragraph (4):

[0002] Image editing tools like Photoshop from Adobe Inc., Paint Shop Pro from JASC Inc. provide graphical user interfaces (GUIs) to the user for manipulating and editing parts or whole of an image. A user may mark regions in an image and do various kind of editing operations on selected regions. Operations like moving the region, deleting the region, rotating the region, scaling the size of the region (both increasing as well as reducing the size) and other such operations create blank areas in the modified image. By way of definition, an exposed pixel is one that belonged to the region manipulated by the user and because the pixel was either moved elsewhere or deleted, it now has no color value assigned to it, i.e., the exposed pixel is blank. Hence, image manipulation operations may lead to blank holes in the modified image which need to be filled in order to create a visually acceptable version of the modified image. Typically, a user desires to modify "objects" in an image and the image editing software may be supplemented with an automatic object-identification process (such as "magic wand" in Adobe Photoshop) to extract the objects in the image. In such cases the user then simply selects objects of interest in the image and proceeds to modify these. The automatic object-identification process may use various image segmentation schemes based on color and texture in the image.

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWIC	Draw Desc	Image
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☐ 8. Document ID: US 20020131640 A1

L3: Entry 8 of 84

File: PGPB

Sep 19, 2002

DOCUMENT-IDENTIFIER: US 20020131640 A1

TITLE: System and method for performing sparse transformed template matching using 3Drasterization

Current US Classification, US Primary Class/Subclass (1):  
382/209

Summary of Invention Paragraph (4):

[0003] Applications for automatic digital object detection and tracking, image registration, pattern recognition and computer vision analysis are becoming increasingly important for providing new classes of services to users based on assessments of the object's presence, position, trajectory, etc. These assessments allow advanced and accurate digital analysis (such as pattern recognition, motion analysis, etc.) of the objects in a scene, for example, objects in a sequence of images of a video scene. Plural objects define each image and are typically nebulous collections of pixels, which satisfy some property. These pixels could be the result of some pre-processing operation such as filtering, equalization, edge or feature detection, applied to raw input images. Each object can occupy a region or regions within each image and can change their relative locations throughout subsequent images of the video scene. These objects are considered moving objects, which form motion within a video scene and can be automatically detected and tracked with various techniques, one being template matching.

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KMIC	Draw Desc	Image
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☐ 9. Document ID: US 20020126896 A1

L3: Entry 9 of 84

File: PGPB

Sep 12, 2002

DOCUMENT-IDENTIFIER: US 20020126896 A1

TITLE: Image feature extraction

Current US Classification, US Primary Class/Subclass (1):  
382/190

Detail Description Paragraph (101):

[0125] In medicine, imaging of the brain is mainly performed by magnetic resonance imaging (MRI) and computed tomography (CT). These two techniques have different strengths in detecting features in the brain; hence it is often desirable to combine the two results into one image. In order to do this; the results need to be aligned in a procedure that is called "referencing". A natural choice as a reference is the skull. Extraction of the skull as a desired feature using the inventive method will enable the two results to be automatically resized and aligned into one image.

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KMIC	Draw Desc	Image
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☐ 10. Document ID: US 20020118889 A1

L3: Entry 10 of 84

File: PGPB

Aug 29, 2002

DOCUMENT-IDENTIFIER: US 20020118889 A1

TITLE: Image status estimating method, image correcting method, image correction apparatus, and storage medium

Current US Classification, US Primary Class/Subclass (1):  
382/274

Current US Classification, US Secondary Class/Subclass (1):  
382/165

Current US Classification, US Secondary Class/Subclass (2):  
382/228

Detail Description Paragraph (56):

[0117] The distance between the center of gravity of each area and the center of the image can be defined as a reference weight coefficient because there is a stronger possibility that an important object is detected closer to the center. Practically, the weight can be computed by the following equation. In the equation,  $d_i$  indicates the distance between the center of the image and the center of gravity of the  $i$ -th area, and  $L_{long}$  indicates the length of a longer side of the image.

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWIC	Draw Desc	Image
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☐ 11. Document ID: US 20020118875 A1

L3: Entry 11 of 84

File: PGPB

Aug 29, 2002

DOCUMENT-IDENTIFIER: US 20020118875 A1

TITLE: Image extraction from complex scenes in digital video

Current US Classification, US Primary Class/Subclass (1):382/173Current US Classification, US Secondary Class/Subclass (2):382/283Summary of Invention Paragraph (9):

[0007] It would thus be desirable to have a method similar to the image extract feature in Adobe.RTM. Photoshop.RTM. that permits accurate object extractions from non-uniform backgrounds, and that also can be applied to a digital video clip without manually having to mark the object to be extracted in every digital image in the video sequence.

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWIC	Draw Desc	Image
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☐ 12. Document ID: US 20020114518 A1

L3: Entry 12 of 84

File: PGPB

Aug 22, 2002

DOCUMENT-IDENTIFIER: US 20020114518 A1

TITLE: Hough transform supporting methods and arrangements

Current US Classification, US Primary Class/Subclass (1):382/199Current US Classification, US Secondary Class/Subclass (1):382/170Current US Classification, US Secondary Class/Subclass (2):382/276Summary of Invention Paragraph (4):

[0002] Applications for automatic digital object detection and tracking, image registration, pattern recognition and computer vision analysis are becoming increasingly important for providing new classes of services to users based on assessments of the object's presence, position, trajectory, etc. These assessments allow advanced and accurate digital analysis (such as pattern recognition, motion

analysis, etc.) of the objects in a scene, for example, objects in a sequence of images of a video scene. Plural objects define each image and are typically nebulous collections of pixels, which satisfy some property.

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWIC	Draw Desc	Image
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☐ 13. Document ID: US 20020071598 A1

L3: Entry 13 of 84

File: PGPB

Jun 13, 2002

DOCUMENT-IDENTIFIER: US 20020071598 A1

TITLE: System for fingerprint authentication

Current US Classification, US Primary Class/Subclass (1):  
382/125

Summary of Invention Paragraph (7):

[0005] The present invention is directed to a curve recognition system and its application to fingerprint authentication based on ridge shape information. It is small size data format for curves on discrete grids, and relative measure robust against shifting, rotation and noise. The invention provides fast and accurate fingerprint authentication algorithm and hardware system with small data storages of 50 bytes. Several important techniques are included in the invention such as secondary minutia, criteria for true or false minutia, treatment of shifted and rotated fingerprint input, pipeline parallel processing within 0.24 seconds for raster scan image capture and feature extraction processing, and several useful applications such as on-line verification.

Detail Description Paragraph (81):

[0101] In summary, the present invention provides a curve recognition system and its application to fingerprint authentication based on ridge shape information, which achieves small size data format for curves on discrete grids, fast and accurate fingerprint authentication algorithm and hardware system with small data storages. Several important techniques are included in the convention such as ridge shape of secondary points, true and false minutia detection, treatment of shifted and rotated input of fingerprint image, pipeline parallel processing for raster scan image capture and feature extraction processing, and several useful applications.

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWIC	Draw Desc	Image
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☐ 14. Document ID: US 20020031260 A1

L3: Entry 14 of 84

File: PGPB

Mar 14, 2002

DOCUMENT-IDENTIFIER: US 20020031260 A1

TITLE: Text mining method and apparatus for extracting features of documents

Current US Classification, US Primary Class/Subclass (1):  
382/190

Summary of Invention Paragraph (7):

[0005] In text mining as a technology for squeezing desired knowledge or information by making analysis of text data, effective feature extraction of documents is an important task for efficiently performing document and/or web retrieval, associated term retrieval, document classification and so on. As a typical document feature

extracting method, a vector-space model as set out on page 313 of "Automatic Text Processing" (Addison-Wesley, 1989) is frequently used.

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KM/C	Draw Desc	Image
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☐ 15. Document ID: US 20010046321 A1

L3: Entry 15 of 84

File: PGPB

Nov 29, 2001

DOCUMENT-IDENTIFIER: US 20010046321 A1

TITLE: IMAGE DATA PROCESSING APPARATUS AND IMAGE DATA PROCESSING METHOD

Current US Classification, US Primary Class/Subclass (1):  
382/190

Detail Description Paragraph (97):

[0131] Furthermore, in the image data digitizing process preceding the feature extraction operation, by setting the threshold value to a value offset a specific amount from the median pixel value of the pixel value distribution, images with minimal change in gradation occupying a large area of the image can be digitized without losing the essential original image features. As a result, image features can be more accurately extracted.

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KM/C	Draw Desc	Image
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☐ 16. Document ID: US 6487306 B1

L3: Entry 16 of 84

File: USPT

Nov 26, 2002

DOCUMENT-IDENTIFIER: US 6487306 B1

TITLE: System and method for deriving a string-based representation of a fingerprint image

Brief Summary Text (12):

It is often not desirable to directly use the input fingerprint image for feature extraction. The fingerprint image might need an enhancement or preprocessing before one could further extract minutiae. Typically, a smoothing process is employed to reduce the pixel-wise noise (step 305).

Current US Original Classification (1):  
382/125

Current US Cross Reference Classification (1):  
382/201

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KM/C	Draw Desc	Image
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☐ 17. Document ID: US 6483943 B1

L3: Entry 17 of 84

File: USPT

Nov 19, 2002



DOCUMENT-IDENTIFIER: US 6483943 B1

TITLE: Feature value extraction methods and apparatus for image recognition and storage medium for storing image analysis program

Detailed Description Text (7):

It will be readily understood from the foregoing that this invention may be implemented by a conventional personal computer (PC), a workstation, a dedicated OCR, a computer incorporated into a variety of household electric appliances such as a TV set or a FAX machine, and any combinations thereof. Note, however, that these elements are listed for an exemplification purpose only, and all of these elements are not necessarily equated with essential elements of this invention. In particular, since this invention is directed to extraction of a feature value of an image, those elements such as serial port 15, communication adapter 18, audio controller 21, amplifier 22 and speaker 23 are non-essential elements in one aspect of this invention.

Current US Original Classification (1):

382/199

Current US Cross Reference Classification (1):

382/203

Current US Cross Reference Classification (2):

382/205

Current US Cross Reference Classification (3):

382/266

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KMC	Draw Desc	Image
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☐ 18. Document ID: US 6480618 B1

L3: Entry 18 of 84

File: USPT

Nov 12, 2002

DOCUMENT-IDENTIFIER: US 6480618 B1

TITLE: Robotic device for removing selected portions of a polyacrylamide gel

Detailed Description Text (25):

It is desirable to provide one or more reference points, detectable by the imaging device, for use in determining the x,y, coordinates of any features detected in the two-dimensional array of separated proteins. Reference points can be provided on a support (e.g. a functionalized generally planar glass surface) to which a gel is covalently attached. Alternatively, reference points can be provided on a frame to which a gel is fixed during imaging; a matching frame can be provided in a robotic isolation device.

Current US Original Classification (1):

382/129

Current US Cross Reference Classification (1):

382/153

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KMC	Draw Desc	Image
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☐ 19. Document ID: US 6421463 B1

L3: Entry 19 of 84

File: USPT

Jul 16, 2002

DOCUMENT-IDENTIFIER: US 6421463 B1

TITLE: Trainable system to search for objects in images

Brief Summary Text (7):

Furthermore, in defining or modeling complicated classes of objects (e.g., faces, pedestrians, etc . . . ) the intra-class variability itself is significant and difficult to model. Since it is not known how many instances of the class are presented in any particular image or scene, if any, the detection problem cannot easily be solved using methods such as maximum-a-posteriori probability (MAP) or maximum likelihood (ML) methods. Consequently, the classification of each pattern in the image must be performed independently. This makes the decision process susceptible to missed instances of the class and to false positives. Thus, in an object detection process, it is desirable for the class description to have large discriminative power thereby enabling the processing system to recognize particular object types in a variety of different images including cluttered and uncluttered images.

Brief Summary Text (16):

Nevertheless, it would be desirable to provide a technique to reliably and repeatedly detect objects, such as pedestrians, which have significant variability in patterns and colors within the boundaries of the object and which can detect objects even in the absence of constraints on the image background. It would also be desirable to provide a formalization of a template structure in terms of simple primitives, a rigorous learning scheme capable of working with real images, and also to provide a technique to apply the ratio template concept to relatively complex object classes such as pedestrians. It would further be desirable to provide a technique and architecture for object detection which is trainable and which may also be used to detect people in static or video images of cluttered scenes. It would further be desirable to provide a system which can detect highly non-rigid objects with a high degree of variability in size, shape, color, and texture and which does not rely on any a priori (hand-crafted) models or on changes in position of objects between frames in a video sequence.

Current US Original Classification (1):382/224Current US Cross Reference Classification (1):382/279

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWIC	Draw Desc	Image
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☐ 20. Document ID: US 6381365 B2

L3: Entry 20 of 84

File: USPT

Apr 30, 2002

DOCUMENT-IDENTIFIER: US 6381365 B2

TITLE: Image data processing apparatus and image data processing method

Detailed Description Text (90):

Furthermore, in the image data digitizing process preceding the feature extraction operation, by setting the threshold value to a value offset a specific amount from the median pixel value of the pixel value distribution, images with minimal change in gradation occupying a large area of the image can be digitized without losing the essential original image features. As a result, image features can be more accurately extracted.

Current US Original Classification (1):  
382/190

Current US Cross Reference Classification (2):  
382/218

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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RMC	Draw Desc	Image
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☐ 21. Document ID: US 6351573 B1

L3: Entry 21 of 84

File: USPT

Feb 26, 2002

DOCUMENT-IDENTIFIER: US 6351573 B1  
TITLE: Imaging device and method

Detailed Description Text (11):

Feature extraction. As used herein "feature extraction" means a method of identification of image components which are important to the image analysis being conducted. These may include boundaries, angles, area, center of mass, central moments, circularity, rectangularity and regional gray-scale intensities in the image being analyzed.

Current US Original Classification (1):  
382/294

Current US Cross Reference Classification (1):  
382/128

Current US Cross Reference Classification (2):  
382/130

Current US Cross Reference Classification (3):  
382/131

Current US Cross Reference Classification (4):  
382/133

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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RMC	Draw Desc	Image
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☐ 22. Document ID: US 6314197 B1

L3: Entry 22 of 84

File: USPT

Nov 6, 2001

DOCUMENT-IDENTIFIER: US 6314197 B1  
TITLE: Determining an alignment estimation between two (fingerprint) images

Brief Summary Text (15):

It is often not desirable to directly use the input fingerprint image for feature extraction. The fingerprint image might need an enhancement or preprocessing before one could further extract minutiae. Typically, a smoothing process is employed to reduce the pixel-wise noise (step 305).

Current US Original Classification (1):  
382/125

Current US Cross Reference Classification (1):

382/289

Current US Cross Reference Classification (2):

382/291

Current US Cross Reference Classification (3):

382/294

Current US Cross Reference Classification (4):

382/295

Current US Cross Reference Classification (5):

382/296

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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RMIC	Draw Desc	Image
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☐ 23. Document ID: US 6289112 B1

L3: Entry 23 of 84

File: USPT

Sep 11, 2001

DOCUMENT-IDENTIFIER: US 6289112 B1

TITLE: System and method for determining block direction in fingerprint images

Brief Summary Text (17):

It is often not desirable to directly use the input fingerprint image for feature extraction. The fingerprint image might need an enhancement or preprocessing before one could further extract minutiae. Typically, a smoothing process is employed to reduce the pixel-wise noise (step 305).

Current US Original Classification (1):

382/116

Current US Cross Reference Classification (1):

382/124

Current US Cross Reference Classification (2):

382/266

Current US Cross Reference Classification (3):

382/272

Current US Cross Reference Classification (4):

382/274

Current US Cross Reference Classification (5):

382/289

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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RMIC	Draw Desc	Image
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☐ 24. Document ID: US 6278794 B1

L3: Entry 24 of 84

File: USPT

Aug 21, 2001

DOCUMENT-IDENTIFIER: US 6278794 B1

TITLE: Computer-assisted isolation and characterization of proteins

Detailed Description Text (25):

It is desirable to provide one or more reference points, detectable by the imaging device, for use in determining the x,y, coordinates of any features detected in the two-dimensional array of separated proteins. Reference points can be provided on a support (e.g. a functionalized generally planar glass surface) to which a gel is covalently attached. Alternatively, reference points can be provided on a frame to which a gel is fixed during imaging; a matching frame can be provided in a robotic isolation device.

Current US Original Classification (1):382/129Current US Cross Reference Classification (1):382/153

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KMCM	Draw Desc	Image
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☐ 25. Document ID: US 6266433 B1

L3: Entry 25 of 84

File: USPT

Jul 24, 2001

DOCUMENT-IDENTIFIER: US 6266433 B1

TITLE: System and method for determining ridge counts in fingerprint image processing

Brief Summary Text (25):

It is often not desirable to directly use the input fingerprint image for feature extraction. The fingerprint image might need an enhancement or preprocessing before one could further extract minutiae. Typically, a smoothing process is employed to reduce the pixel-wise noise (step 305).

Current US Original Classification (1):382/125Current US Cross Reference Classification (2):382/124Current US Cross Reference Classification (3):382/173Current US Cross Reference Classification (4):382/194

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KMCM	Draw Desc	Image
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☐ 26. Document ID: US 6263091 B1

L3: Entry 26 of 84

File: USPT

Jul 17, 2001

DOCUMENT-IDENTIFIER: US 6263091 B1

TITLE: System and method for identifying foreground and background portions of digitized images

Brief Summary Text (18):

It is often not desirable to directly use the input fingerprint image for feature extraction. The fingerprint image might need an enhancement or preprocessing before one could further extract minutiae. Typically, a smoothing process is employed to reduce the pixel-wise noise (step 305).

Current US Original Classification (1):

382/125

Current US Cross Reference Classification (1):

382/124

Current US Cross Reference Classification (2):

382/173

Current US Cross Reference Classification (3):

382/190

Current US Cross Reference Classification (4):

382/197

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWIC	Draw Desc	Image
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☐ 27. Document ID: US 6256411 B1

L3: Entry 27 of 84

File: USPT

Jul 3, 2001

DOCUMENT-IDENTIFIER: US 6256411 B1

TITLE: Image processing device and method for detecting objects in image data

Detailed Description Text (17):

FIG. 6 shows the essential part of the read image corresponding to FIG. 3, FIGS. 7(A) and 7(B) briefly illustrate the dynamic contour, FIG. 8 shows an example of an operator mask for calculating edge intensity, and FIGS. 9(A) and 9(B) illustrate the process of detecting an object image such as a finger.

Current US Original Classification (1):

382/203

Current US Cross Reference Classification (4):

382/199

Current US Cross Reference Classification (5):

382/215

Current US Cross Reference Classification (6):

382/317

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWIC	Draw Desc	Image
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☐ 28. Document ID: US 6252978 B1

L3: Entry 28 of 84

File: USPT

Jun 26, 2001

DOCUMENT-IDENTIFIER: US 6252978 B1

TITLE: Device for protecting a motor vehicle against use by third parties, with

individual driving authorization

Detailed Description Text (2):

In the FIGURE only elements which are essential to protect against use by third parties are shown. At the user end these are a plurality of electronic key units (2) (only one being shown for the purpose of illustration) with a mechanical ignition lock-actuating component. In each key unit (2) there is stored, inter alia, vehicle-specific code information, coded access authorization information and coded user-specific desired facial area information. In the vehicle (1), which is indicated only schematically, the apparatus comprises a control device (3) which, in addition to protecting against use by third parties, fulfills further operating functions for the vehicle (1) which are not essential here, a vehicle-seat positioning unit (4) which can be actuated by the control device (3), and an object detection system (6) which includes in a single component a CCD camera (5), an image processing unit (7) arranged downstream and a coder (8) arranged farther downstream. A plurality of vehicle control units (9) relevant to driving (only one being shown for simplicity of illustration) are connected to an output of the image detection system. The latter may include, in particular, the control devices of the vehicle's electrical system.

Current US Original Classification (1):

382/118

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWIC	Draw Desc	Image
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☐ 29. Document ID: US 6226081 B1

L3: Entry 29 of 84

File: USPT

May 1, 2001

DOCUMENT-IDENTIFIER: US 6226081 B1

TITLE: Optical height of fill detection system and associated methods

Detailed Description Text (10):

In the optical feature process and apparatus of the present invention, the optically detectable feature may be any feature of the container which can be distinguished by the imaging technique employed, although in practice it is important to choose a feature which has a substantially constant position on the container within the degree of precision required. The optically detectable feature may be, for example, the base of the container, a label, neckband or printing applied to the container, a bulge, lip or other protrusion or recess on the container, or a curved part of the container surface; such curved parts produce refraction effects which can readily be detected as contrasting areas in images of the container. Regardless of what feature is chosen, the optical feature process and apparatus have the important advantage that measuring HOF relative to the feature automatically compensates for vertical movements of the container such as may occur due to flexibility of a conveyor on which the container is being transported.

Current US Cross Reference Classification (3):

382/142

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWIC	Draw Desc	Image
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☐ 30. Document ID: US 6195450 B1

L3: Entry 30 of 84

File: USPT

Feb 27, 2001

DOCUMENT-IDENTIFIER: US 6195450 B1

TITLE: Methods and apparatus for controlling X-ray angiographic image acquisition

Detailed Description Text (59):

Referring now to the left and right DIFF feature display areas 1760a and 1770a, respectively, of FIG. 17a, the leading edge of the bolus 1762a and 1772a in the left and right legs, respectively, are easily visualized. As shown in FIG. 17b, the leading edge of the bolus 1762b and 1772b is almost at the end of the image. Ideally, assuming an almost instantaneous stepping time, the imaging device 110/111 (and/or table) would be stepped at about this time. Next, as shown in FIG. 17c, the left and right bolus have begun to reach maximum opacity as shown in areas 1766c and 1776c, respectively. Thereafter, the plateau region of the bolus opacity can be appreciated from the DIFF images 1730, the DIFF features of the left leg 1760, the DSA features of the left leg 1740, the DIFF features of the right leg 1770, and the DSA features of the right leg 1750 shown in FIGS. 17d and 17e. Thus, the DSA images 1720 of FIGS. 17d and 17e show that the contrast media continues to provide good opacity; the opacity depicted by the DSA image 1730, the DSA features of the left leg 1740, and the DSA features of the right leg 1750, only begins to fade (i.e., bolus wash-out) in FIG. 17f. However, in this example, the DIFF features extracted are more important since they indicate will permit the capture of images with the maximum opacity and will not require as made images to be gathered.

Current US Original Classification (1):

382/130

Current US Cross Reference Classification (2):

382/132

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWIC	Draw Desc	Image
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☐ 31. Document ID: US 6185318 B1

L3: Entry 31 of 84

File: USPT

Feb 6, 2001

DOCUMENT-IDENTIFIER: US 6185318 B1

TITLE: System and method for matching (fingerprint) images an aligned string-based representation

Brief Summary Text (13):

It is often not desirable to directly use the input fingerprint image for feature extraction. The fingerprint image might need an enhancement or preprocessing before one could further extract minutiae. Typically, a smoothing process is employed to reduce the pixel-wise noise (step 305).

Current US Original Classification (1):

382/125

Current US Cross Reference Classification (1):

382/115

Current US Cross Reference Classification (2):

382/124

Current US Cross Reference Classification (3):

382/195

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWIC	Draw Desc	Image
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☐ 32. Document ID: US 6111978 A

L3: Entry 32 of 84

File: USPT

Aug 29, 2000

DOCUMENT-IDENTIFIER: US 6111978 A

TITLE: System and method for determining ridge counts in fingerprint image processing

Brief Summary Text (25):

It is often not desirable to directly use the input fingerprint image for feature extraction. The fingerprint image might need an enhancement or preprocessing before one could further extract minutiae. Typically, a smoothing process is employed to reduce the pixel-wise noise (step 305).

Current US Original Classification (1):  
382/125

Current US Cross Reference Classification (1):  
382/124

Current US Cross Reference Classification (2):  
382/168

Current US Cross Reference Classification (3):  
382/170

Current US Cross Reference Classification (4):  
382/173

Current US Cross Reference Classification (5):  
382/204

Current US Cross Reference Classification (6):  
382/264

Current US Cross Reference Classification (7):  
382/266

Current US Cross Reference Classification (8):  
382/268

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWIC	Draw Desc	Image
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☐ 33. Document ID: US 6078410 A

L3: Entry 33 of 84

File: USPT

Jun 20, 2000

DOCUMENT-IDENTIFIER: US 6078410 A

TITLE: Image processing apparatus

Detailed Description Text (152):

In this case, as the image signals of a random part of a line is considered to be the feature data of the line, the need of processing the image signals of the entire line is eliminated, and a time required for extracting the feature data can be reduced. The described arrangement of extracting the feature data from a random part of the line permits the density correction to be desirably applied to a specific

part of the document accurately at high speed.

Current US Cross Reference Classification (2):  
382/156

Current US Cross Reference Classification (3):  
382/162

Current US Cross Reference Classification (4):  
382/168

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KMC	Draw Desc	Image
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☐ 34. Document ID: US 6072895 A

L3: Entry 34 of 84

File: USPT

Jun 6, 2000

DOCUMENT-IDENTIFIER: US 6072895 A

TITLE: System and method using minutiae pruning for fingerprint image processing

Brief Summary Text (25):

It is often not desirable to directly use the input fingerprint image for feature extraction. The fingerprint image might need an enhancement or preprocessing before one could further extract minutiae. Typically, a smoothing process is employed to reduce the pixel-wise noise (step 305).

Current US Original Classification (1):  
382/125

Current US Cross Reference Classification (1):  
382/190

Current US Cross Reference Classification (2):  
382/209

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KMC	Draw Desc	Image
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☐ 35. Document ID: US 6064754 A

L3: Entry 35 of 84

File: USPT

May 16, 2000

DOCUMENT-IDENTIFIER: US 6064754 A

TITLE: Computer-assisted methods and apparatus for identification and characterization of biomolecules in a biological sample

Detailed Description Text (27):

It is desirable to provide one or more reference points, detectable by the imaging device, for use in determining the x,y, coordinates of any features detected in the two-dimensional array of separated proteins. Reference points can be provided on a support (e.g. a functionalized generally planar glass surface) to which a gel is covalently attached. Alternatively, reference points can be provided on a frame to which a gel is fixed during imaging; a matching frame can be provided in a robotic isolation device.

Current US Original Classification (1):

382/129Current US Cross Reference Classification (1):382/153

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWMC	Draw Desc	Image
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☐ 36. Document ID: US 6052476 A

L3: Entry 36 of 84

File: USPT

Apr 18, 2000

DOCUMENT-IDENTIFIER: US 6052476 A

TITLE: Method and apparatus for controlling x-ray angiographic image acquisition

Detailed Description Text (57):

Referring now to the left and right DIFF feature display areas 1760a and 1770a, respectively, of FIG. 17a, the leading edge of the bolus 1762a and 1772a in the left and right legs, respectively, are easily visualized. As shown in FIG. 17b, the leading edge of the bolus 1762b and 1772b is almost at the end of the image. Ideally, assuming an almost instantaneous stepping time, the imaging device 110/111 (and/or table) would be stepped at about this time. Next, as shown in FIG. 17c, the left and right bolus have begun to reach maximum opacity as shown in areas 1766c and 1776c, respectively. Thereafter, the plateau region of the bolus opacity can be appreciated from the DIFF images 1730, the DIFF features of the left leg 1760, the DSA features of the left leg 1740, the DIFF features of the right leg 1770, and the DSA features of the right leg 1750 shown in FIGS. 17d and 17e. Thus, the DSA images 1720 of FIGS. 17d and 17e show that the contrast media continues to provide good opacity; the opacity depicted by the DSA image 1730, the DSA features of the left leg 1740, and the DSA features of the right leg 1750, only begins to fade (i.e., bolus wash-out) in FIG. 17f. However, in this example, the DIFF features extracted are more important since they indicate will permit the capture of images with the maximum opacity and will not require as made images to be gathered.

Current US Original Classification (1):382/130Current US Cross Reference Classification (3):382/132Current US Cross Reference Classification (4):382/274

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWMC	Draw Desc	Image
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☐ 37. Document ID: US 6049621 A

L3: Entry 37 of 84

File: USPT

Apr 11, 2000

DOCUMENT-IDENTIFIER: US 6049621 A

TITLE: Determining a point correspondence between two points in two respective (fingerprint) images

Brief Summary Text (15):

It is often not desirable to directly use the input fingerprint image for feature extraction. The fingerprint image might need an enhancement or preprocessing before

one could further extract minutiae. Typically, a smoothing process is employed to reduce the pixel-wise noise (step 305).

Current US Original Classification (1):

382/125

Current US Cross Reference Classification (1):

382/173

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWIC	Draw Desc	Image
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☐ 38. Document ID: US 6049619 A

L3: Entry 38 of 84

File: USPT

Apr 11, 2000

DOCUMENT-IDENTIFIER: US 6049619 A

TITLE: Method and apparatus for detecting moving objects in two- and three-dimensional scenes

Brief Summary Text (3):

Moving object detection is an important aspect of image sequence analysis. It is necessary for surveillance applications, for guidance of autonomous vehicles, for efficient video compression, for smart tracking of moving objects, and many other applications. The two-dimensional motion observed in an image sequence is caused by three-dimensional camera motion (referred to as ego-motion) and by three-dimensional motions of independently moving objects. The key step in moving object detection is accounting for (or compensating for) the camera-induced image motion. After compensation for camera-induced image motion, the remaining residual motions must be due to moving objects.

Current US Original Classification (1):

382/107

Current US Cross Reference Classification (1):

382/103

Current US Cross Reference Classification (2):

382/294

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWIC	Draw Desc	Image
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☐ 39. Document ID: US 6011872 A

L3: Entry 39 of 84

File: USPT

Jan 4, 2000

DOCUMENT-IDENTIFIER: US 6011872 A

TITLE: Method of generalized content-scalable shape representation and coding

Detailed Description Text (11):

The important sub-regions of image objects may be either determined manually by the user or by an automatic algorithm, e.g., by an automatic face detection algorithm, as described by R. J. Qian, T. S. Huang, "Object Detection Using Hierarchical MRF at MAP Estimation," Proc. Computer Vision and Pattern Recognition, Puerto Rico, June 1997. The important segments of an object contour, the contour of interest, is represented by  $B_{sub.u}$ , where the contour  $C$  is expressed as the union

C=.orgate.B.sub.u. The number of hierarchy layers is chosen for each segment depending on the importance of the object sub-region that it surrounds; we denote the number of layers by  $L(u)$ . If B.sub.u' is the most important part of the contour, then  $L(u).ltoreq.L(u')=L$ . The parameter D.sub.max, which is a function of L, is also a function of the segment of the contour. We express this dependence by D.sub.max [L,u].

Current US Original Classification (1):  
382/243

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KMIC	Draw Desc	Image
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☐ 40. Document ID: US 6005984 A

L3: Entry 40 of 84

File: USPT

Dec 21, 1999

DOCUMENT-IDENTIFIER: US 6005984 A

TITLE: Process and apparatus for extracting and recognizing figure elements using division into receptive fields, polar transformation, application of one-dimensional filter, and correlation between plurality of images

Detailed Description Text (137):

However, information on the obscure portion is very important for moving or working surely, and therefore, the function of extracting features of both the sharp portions and obscure portions in the input image is required. Although filtering with a large mask size is necessary for extracting a line segment from an obscure image, it is impossible by the application of the conventional two-dimensional filter.

Current US Original Classification (1):  
382/276

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KMIC	Draw Desc	Image
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☐ 41. Document ID: US 6005963 A

L3: Entry 41 of 84

File: USPT

Dec 21, 1999

DOCUMENT-IDENTIFIER: US 6005963 A

TITLE: System and method for determining if a fingerprint image contains an image portion representing a partial fingerprint impression

Brief Summary Text (13):

It is often not desirable to directly use the input fingerprint image for feature extraction. The fingerprint image might need an enhancement or preprocessing before one could further extract minutiae. Typically, an image smoothing process is employed to reduce the pixel-wise noise by assuming spatial pixel correlation (step 305).

Current US Original Classification (1):  
382/124

Current US Cross Reference Classification (1):  
382/115

Current US Cross Reference Classification (2) :  
382/116

Current US Cross Reference Classification (3) :  
382/125

Current US Cross Reference Classification (4) :  
382/127

Current US Cross Reference Classification (5) :  
382/195

Current US Cross Reference Classification (6) :  
382/199

Current US Cross Reference Classification (7) :  
382/228

Current US Cross Reference Classification (8) :  
382/256

Current US Cross Reference Classification (9) :  
382/289

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KMIC	Draw Desc	Image
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☒ 42. Document ID: US 5999646 A

L3: Entry 42 of 84

File: USPT

Dec 7, 1999

DOCUMENT-IDENTIFIER: US 5999646 A

TITLE: Image forming apparatus with image storage and image selection based on feature extraction

Detailed Description Text (65) :

When the image areas are grouped and histogram data is produced for each group of the distinguished image areas, information about the image area groups and the histogram data are stored together with the read-image data produced on a document basis, and when the foregoing operations have been performed for all the documents to be copied, the process proceeds to step S14 and then to S15, where an image to be test-copied is selected. As described above regarding the first embodiment, an image with a large difference in density (F13) is selected on the basis of the histogram data produced for each of the distinguished image areas. In the case of a text document, an image with a large difference in density in a particular area (F14) is selected. Otherwise, an image with halftone areas (F15) is selected. The selection, that is, the extraction of features is desirable to be performed of an image with clearer density gradations in order to help the operator adjust the image density; the operator can easily envisage the density profiles of the actual hard copies and easily set the conditions so as to output the hard copies conditioned as desired by referring to the output test copy of the selected image.

Current US Original Classification (1) :  
382/169

Current US Cross Reference Classification (2) :  
382/112

Current US Cross Reference Classification (3) :  
382/195

Current US Cross Reference Classification (4):382/283

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWIC	Draw Desc	Image
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☐ 43. Document ID: US 5995640 A

L3: Entry 43 of 84

File: USPT

Nov 30, 1999

DOCUMENT-IDENTIFIER: US 5995640 A

TITLE: System and method for determining if a fingerprint image contains an image portion representing a dry fingerprint impression

Brief Summary Text (13):

It is often not desirable to directly use the input fingerprint image for feature extraction. It might need an enhancement or preprocessing before one could further extract minutiae. Typically, a smoothing process is employed to reduce the pixel-wise noise (step 305).

Current US Original Classification (1):382/124Current US Cross Reference Classification (1):382/125Current US Cross Reference Classification (2):382/272

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWIC	Draw Desc	Image
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☐ 44. Document ID: US 5991460 A

L3: Entry 44 of 84

File: USPT

Nov 23, 1999

DOCUMENT-IDENTIFIER: US 5991460 A

TITLE: Navigation system using hybrid sensor correlation system

Detailed Description Text (49):

On its simplest level complex shapes of environmental sensors (e.g., Doppler radar images) may be detected through use of a relatively small number of holograms that may be used to represent an range of expected values. Alternatively, more computationally intensive correlation processes, such as feature extraction or weighted neural networks, may be used for searching images for important predetermined features (see, for example, U.S. Pat. No. 5,220,622 to Scarr).

Current US Original Classification (1):382/278Current US Cross Reference Classification (2):382/210

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWIC	Draw Desc	Image
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☐ 45. Document ID: US 5987094 A

L3: Entry 45 of 84

File: USPT

Nov 16, 1999

DOCUMENT-IDENTIFIER: US 5987094 A

TITLE: Computer-assisted method and apparatus for the detection of lung nodules

Brief Summary Text (49):

Among the important aspects of this method, system, and apparatus are the use of multiresolution/multiorientation wavelet transforms in the image preprocessing for improved feature extraction and the use of higher-order transforms (M,N) for improved performance or application for different sensors.

Current US Cross Reference Classification (1):382/128Current US Cross Reference Classification (2):382/132

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KMCC	Draw Desc	Image
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☒ 46. Document ID: US 5978513 A

L3: Entry 46 of 84

File: USPT

Nov 2, 1999

DOCUMENT-IDENTIFIER: US 5978513 A

TITLE: Picture encoding method and apparatus and picture decoding method and apparatus

Brief Summary Text (6):

However, in these coding methods, as the compression rate is increased, the block starts distorting and visually undesirable effects become obvious. Thus, a structure extraction coding system which extracts feature points of the picture structure (for example, points constructing edges (pixels)) and efficiently encodes the picture data at the feature points by picture feature point detection has been introduced as the coding system which does not produce visually undesirable distortion due to the high compression rate. The structure extraction coding system has been proposed in the specification and drawings of the U.S. patent Ser. No. 08/457,830 filed in Jun. 1, 1995 by this applicant.

Current US Original Classification (1):382/242Current US Cross Reference Classification (1):382/197

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KMCC	Draw Desc	Image
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☐ 47. Document ID: US 5963656 A

L3: Entry 47 of 84

File: USPT

Oct 5, 1999

DOCUMENT-IDENTIFIER: US 5963656 A

TITLE: System and method for determining the quality of fingerprint images



Brief Summary Text (13):

It is often not desirable to directly use the input fingerprint image for feature extraction. It might need an enhancement or preprocessing before one could further extract minutiae. Typically, a smoothing process is employed to reduce the pixel-wise noise (step 305).

Current US Original Classification (1):382/124Current US Cross Reference Classification (1):382/125Current US Cross Reference Classification (2):382/254

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KMIC	Draw Desc	Image
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☐ 48. Document ID: US 5933530 A

L3: Entry 48 of 84

File: USPT

Aug 3, 1999

DOCUMENT-IDENTIFIER: US 5933530 A

TITLE: Image recognition apparatus using image enhancement processing

Brief Summary Text (5):

Generally, when recognizing an object by using an image recognition apparatus, an edge portion extraction of an object, a comparison between the thusly extracted portion and a reference pattern, and an image correction and recovery are very important factors. In order to obtain the above-described factors, a numerous operation and high computation efficiency with respect to the obtained image data are needed.

Current US Original Classification (1):382/218Current US Cross Reference Classification (1):382/211Current US Cross Reference Classification (2):382/260Current US Cross Reference Classification (3):382/278Current US Cross Reference Classification (4):382/279

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KMIC	Draw Desc	Image
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☐ 49. Document ID: US 5915038 A

L3: Entry 49 of 84

File: USPT

Jun 22, 1999

DOCUMENT-IDENTIFIER: US 5915038 A

TITLE: Using index keys extracted from JPEG-compressed images for image retrieval

Detailed Description Text (73):

The JPEG compression scheme and analogous compression schemes are attractive for still image indexing and other image-processing operations because images encoded using them are encoded as a combination of spatial components and frequency components. The frequency components are band-pass filtered, which can be used to approximate image operations such as edge detection and texture analysis. The spatial coherence of the JPEG scheme enables adjacency relations to be retained, which is important for object detection and for syntactic methods that rely on relative positions or orientations of regions in an image.

Current US Original Classification (1):

382/209

Current US Cross Reference Classification (2):

382/224

Current US Cross Reference Classification (3):

382/232

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWC	Draw Desc	Image
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☒ 50. Document ID: US 5912992 A

L3: Entry 50 of 84

File: USPT

Jun 15, 1999

DOCUMENT-IDENTIFIER: US 5912992 A

TITLE: Binary image forming device with shading correction means using interpolation of shade densities determined by using sample points

Brief Summary Text (12):

On the basis of the above-mentioned density relationship existing between an object and its neighboring background, it is an object of the present invention to provide a binary image forming device which is capable of generating a desirable binary image by eliminating the effect of shading from an input image by calculating a background density, determining shading of the image and then extracting objects (characters and lines) only and entirely, i.e., without erasing any object even if the objects are shaded or vaguely contoured objects and coexists with distinctly contoured objects in the image.

Brief Summary Text (16):

It is another object of the present invention to provide a binary image forming device even if a large distance between sample points must be set because sizes of extractive objects can not correctly be recognized, which can produce a more accurate shading image by determining the shading with an increased number of suitable sample points to finally obtain an accurate and desirable binary image.

Detailed Description Text (33):

An input image to be binarized is inputted through the image input portion 301 such as a charge-coupled camera (CCD) (Step S301). Like the sample-point setting portion 102 of the first embodiment, the initial sample-point setting portion 302 sets initial sample points 30a at specified horizontal and vertical distances of  $s_x$  and  $s_y$  therebetween (Step S302). In the third embodiment, values of  $s_x$  and  $s_y$  are desirable to set in accordance with sizes of extractive objects in an input image. With an input image containing an object whose size can not accurately be defined, the parameters  $s_x$  and  $s_y$  may be set at values sufficiently larger than presumed values.

Detailed Description Text (46):

The binary image forming device mentioned in the third embodiment can produce a shade image by adding any number of necessary sample points in accordance with shading of an input image, which is measured at initial sample points, and more accurately determine shading on the input image than the devices mentioned in the first and second embodiment. Even in the case if sample points must be set at large intervals because objects to be extracted from an input image can not be measured in size, this embodiment can accurately calculate a shade image by additionally setting necessary sample points and finally generate a more desirable binary image.

Current US Original Classification (1):

382/274

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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K/M/C	Draw Desc	Image
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Term	Documents
ESSENTIAL.DWPI,TDBD,EPAB,JPAB,USPT,PGPB.	498051
ESSENTIALS.DWPI,TDBD,EPAB,JPAB,USPT,PGPB.	3126
IMPORTANT.DWPI,TDBD,EPAB,JPAB,USPT,PGPB.	935069
IMPORTANTS.DWPI,TDBD,EPAB,JPAB,USPT,PGPB.	5
NONESSENTIAL.DWPI,TDBD,EPAB,JPAB,USPT,PGPB.	3840
NONESSENTIALS.DWPI,TDBD,EPAB,JPAB,USPT,PGPB.	10
UNIMPORTANT.DWPI,TDBD,EPAB,JPAB,USPT,PGPB.	13544
UNIMPORTANTS	0
NONIMPORTANT.DWPI,TDBD,EPAB,JPAB,USPT,PGPB.	6
NONIMPORTANTS	0
382/\$	0
(((382/\$).CCLS.)) AND ((EXTRAC\$5 OR DETEC\$5) NEAR1 (FEATUR\$5 OR OBJECT\$5)) WITH (IMAG\$5 OR PICTUR\$5 OR PIXEL\$5 OR DOCUMENT\$5) WITH (ESSENTIAL OR IMPORTANT OR DESIR\$5 OR NONESSENTIAL OR UNIMPORTANT OR NONIMPORTANT OR NONDESIR\$5 OR UNDESIR\$5)).USPT,PGPB,JPAB,EPAB,DWPI,TDBD.	84

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Search Results - Record(s) 51 through 84 of 84 returned.

☐ 51. Document ID: US 5911035 A

L3: Entry 51 of 84

File: USPT

Jun 8, 1999

DOCUMENT-IDENTIFIER: US 5911035 A

TITLE: Method and apparatus for determining binocular affine disparity and affine invariant distance between two image patterns

Brief Summary Text (15):

Stereo mapping involves fusing together two images, for example, of terrain taken from two nearby viewpoints in order to obtain a map which provides three-dimensional information such as terrain elevations and three dimensional surface orientation. These images, for example, can be taken at different but relatively close points in time from an aircraft flying over the terrain. In the past, the images have been fused by a tedious process of matching corresponding terrain features in the two images. A system for stereo mapping has been proposed which employs the binocular fusion capability of a human operator's brain to fuse two images of terrain. The operator views the images through a binocular viewing apparatus and adjusts the apparatus until the images are perceived as fused by the operator. The amount of adjustment yields valuable information regarding binocular disparity; however, the actual fusion of the images onto an elevational map of the terrain continues to require matching some benchmark geographic features. A number of methods have been proposed for implementing binocular vision and determining binocular disparity using machine vision. An important aspect of these proposed methods is the computational problem of detecting features from stereo or binocular images at various spatial resolution levels, and finding their correspondence relations. If the stereo correspondence problem, i.e., feature detection and feature matching, is solved, the measurement of the displacements of the features from one ocular representation to another is straightforward. The problem of matching the features, however, is difficult solve. For example, it is difficult to determine whether a generic feature should correspond to another particular generic feature when there are many candidates. When the visible surface is not in the frontal view, the binocular features may vary in scale and be sheared. Moreover, the problem of feature matching itself is not even a well formulated one since it raises the issue of what kinds of features should be considered generic.

Current US Cross Reference Classification (1):382/107Current US Cross Reference Classification (2):382/156Current US Cross Reference Classification (3):382/158

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWIC	Draw Desc	Image
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☐ 52. Document ID: US 5901252 A

L3: Entry 52 of 84

File: USPT

May 4, 1999

DOCUMENT-IDENTIFIER: US 5901252 A

TITLE: Process and apparatus for extracting and recognizing figure elements using division into receptive fields, polar transformation, application of one-dimensional filter, and correlation between plurality of images

Detailed Description Text (132):

However, information on the obscure portion is very important for moving or working surely, and therefore, the function of extracting features of both the sharp portions and obscure portions in the input image is required. Although filtering with a large mask size is necessary for extracting a line segment from an obscure image, it is impossible by the application of the conventional two-dimensional filter.

Current US Original Classification (1):

382/276

Current US Cross Reference Classification (3):

382/293

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWIC	Draw Desc	Image
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☐ 53. Document ID: US 5898799 A

L3: Entry 53 of 84

File: USPT

Apr 27, 1999

DOCUMENT-IDENTIFIER: US 5898799 A

TITLE: Image signal coding and decoding method and apparatus

Brief Summary Text (6):

However, if the compression ratio is made higher, those methods have a disadvantage in that visually undesirable effects such as block distortion, and so on, are revealed. For this reason, as a coding method which makes such visually undesirable effects (distortion) avoidable even under the high compression rate, there is used a structure extraction coding method using detection of feature points in an image, in which feature points in a structure of an image are extracted to thereby perform efficient coding.

Current US Original Classification (1):

382/242

Current US Cross Reference Classification (1):

382/197

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWIC	Draw Desc	Image
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☐ 54. Document ID: US 5883971 A

L3: Entry 54 of 84

File: USPT

Mar 16, 1999

DOCUMENT-IDENTIFIER: US 5883971 A

TITLE: System and method for determining if a fingerprint image contains an image portion representing a smudged fingerprint impression

Brief Summary Text (15):

It is often not desirable to directly use the input fingerprint image for feature extraction. It might need an enhancement or preprocessing before one could further extract minutiae. Typically, a smoothing process is employed to reduce the pixel-wise noise (step 305).

Current US Original Classification (1):  
382/124

Current US Cross Reference Classification (1):  
382/115

Current US Cross Reference Classification (2):  
382/116

Current US Cross Reference Classification (3):  
382/125

Current US Cross Reference Classification (4):  
382/126

Current US Cross Reference Classification (5):  
382/263

Current US Cross Reference Classification (6):  
382/266

Current US Cross Reference Classification (7):  
382/272

Current US Cross Reference Classification (8):  
382/274

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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RMC	Draw Desc	Image
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☐ 55. Document ID: US 5878165 A

L3: Entry 55 of 84

File: USPT

Mar 2, 1999

DOCUMENT-IDENTIFIER: US 5878165 A

TITLE: Method for extracting object images and method for detecting movements thereof

Brief Summary Text (43):

Another object of the present invention is to provide a method for detecting a gradient of an object image color field, wherein a concept of an "object color field" formed by a color of an object and the shape and the size of the color region is utilized, a gradient of the "object color field" is detected and wherein, even if a plurality of important color regions or objects are present, an object considered as being most important is selected, and a gradient of the "object color field" directed towards the selected object is detected.

Current US Original Classification (1):  
382/199

Current US Cross Reference Classification (1):  
382/156

Current US Cross Reference Classification (2):  
382/291

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWNC	Draw Desc	Image
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☐ 56. Document ID: US 5870493 A

L3: Entry 56 of 84

File: USPT

Feb 9, 1999

DOCUMENT-IDENTIFIER: US 5870493 A

TITLE: Top down preprocessor for a machine vision system

Brief Summary Text (13):

An alternative to extracting features using predefined, generally applicable fixed filters (detectors), such as generated by Gabor and end-stop filters, is to design a system that generates its own feature detectors. In biological systems, the feature detectors must be general enough to handle all possible inputs encountered during the life experiences of the animal. It has been shown that a linear neural network with a correlation rule, when stimulated by random noise, will develop feature detectors similar to the center-surround and Gabor filters found in some artificial visual systems. However, in most practical applications of artificial networks, the universe of possible inputs is more restricted. This suggests that a system for adaptive filter generation that can develop feature detectors specific to the range of images that are encountered in a practical application would be highly desirable. Self-modifying learning algorithms have been pursued wherein a learning algorithm learns about its own effectiveness and modifies itself so that it is the most effective algorithm for solving a certain class of problems.

Current US Original Classification (1):

382/195

Current US Cross Reference Classification (1):

382/288

Current US Cross Reference Classification (2):

382/295

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWNC	Draw Desc	Image
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☐ 57. Document ID: US 5835237 A

L3: Entry 57 of 84

File: USPT

Nov 10, 1998

DOCUMENT-IDENTIFIER: US 5835237 A

TITLE: Video signal coding method and apparatus thereof, and video signal decoding apparatus

Detailed Description Text (28):

In the case of images, studies of the human visual system show that the edge information which represents singular points is a very important construction component in feature extraction and image understanding. (D. Marr. Vision. W. H. Freeman and Company, New York, 1983, M. Kunt, A. Ikonomopoulos, and M. Kocher. Second generation image coding techniques. Proceedings of the IEEE, 73(4):549-575, April 1985, M. Kunt, M. Bernard, and R. Leonardi. Recent results in high compression image coding. IEEE Trans. on Circuits and Systems, 34(11):1306-1336, November 1987). Moreover, the reconstruction of a signal from its singularities is very helpful in several applications such as coding, computer vision, signal analysis, and so on.

Current US Cross Reference Classification (1):  
382/266

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWIC	Draw Desc	Image
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☐ 58. Document ID: US 5790692 A

L3: Entry 58 of 84

File: USPT

Aug 4, 1998

DOCUMENT-IDENTIFIER: US 5790692 A

TITLE: Method and means of least squares designed filters for image segmentation in scanning cytometry

Detailed Description Text (22):

Real-time histogram and feature extraction capabilities of the image processor 110 (FIG. 1) are important for timely operation of the cytometer 100. The histogram array (not shown), generated by the HF 134 in histogram mode, is an array containing the number of pixels in the image at each intensity (e.g., for an 8-bit pixel, gray-scale image, the intensity range is 0, representing minimum intensity, to 255, representing maximum intensity). The histogram can be used for intensity statistics. For example, obtaining the average and standard deviation in the image for the purpose of autofocus. In feature extraction mode, the HF 134 provides an organized array of all pixels at defined sets of intensities. As will be further discussed below, the groups of pixels or "streaks" are compressed by the HF 134 using the well-known method of run-length encoding (RLE). The Series 151 is programmed by writing to registers on the processing boards. A set of higher level routines is provided by the Series 151 Library.

Current US Original Classification (1):  
382/133

Current US Cross Reference Classification (1):  
382/173

Current US Cross Reference Classification (2):  
382/205

Current US Cross Reference Classification (3):  
382/265

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWIC	Draw Desc	Image
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☐ 59. Document ID: US 5768443 A

L3: Entry 59 of 84

File: USPT

Jun 16, 1998

DOCUMENT-IDENTIFIER: US 5768443 A

TITLE: Method for coordinating multiple fields of view in multi-camera

Detailed Description Text (58):

A calibration can be no more accurate than the raw data used to compute the fitting map. It is essential to provide a high-quality image and high-accuracy feature extraction to get the best calibration.

Current US Original Classification (1):



382/294

Current US Cross Reference Classification (1):  
382/151

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWIC	Draw Desc	Image
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☐ 60. Document ID: US 5751831 A

L3: Entry 60 of 84

File: USPT

May 12, 1998

DOCUMENT-IDENTIFIER: US 5751831 A

TITLE: Method for extracting object images and method for detecting movements thereof

Brief Summary Text (43):

Another object of the present invention is to provide a method for detecting a gradient of an object image color field, wherein a concept of an "object color field" formed by a color of an object and the shape and the size of the color region is utilized, a gradient of the "object color field" is detected and wherein, even if a plurality of important color regions or objects are present, an object considered as being most important is selected, and a gradient of the "object color field" directed towards the selected object is detected.

Current US Original Classification (1):  
382/103

Current US Cross Reference Classification (1):  
382/107

Current US Cross Reference Classification (2):  
382/156

Current US Cross Reference Classification (3):  
382/199

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWIC	Draw Desc	Image
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☐ 61. Document ID: US 5712928 A

L3: Entry 61 of 84

File: USPT

Jan 27, 1998

DOCUMENT-IDENTIFIER: US 5712928 A

TITLE: Picture encoding method and apparatus and picture decoding method and apparatus

Brief Summary Text (6):

However, in these coding methods, as the compression rate is increased, the block starts distorting and visually undesirable effects become obvious. Thus, a structure extraction coding system which extracts feature points of the picture structure (for example, points constructing edges (pixels)) and efficiently encodes the picture data at the feature points by picture feature point detection has been introduced as the coding system which does not produce visually undesirable distortion due to the high compression rate. The structure extraction coding system has been proposed in the specification and drawings of the U.S. patent application Ser. No. 08/457,830

filed in Jun. 1, 1995 by this applicant.

Current US Original Classification (1):  
382/242

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWIC	Draw Desc	Image
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☐ 62. Document ID: US 5644648 A

L3: Entry 62 of 84

File: USPT

Jul 1, 1997

DOCUMENT-IDENTIFIER: US 5644648 A

TITLE: Method and apparatus for connected and degraded text recognition

Detailed Description Text (50):

Prior to feature identification, the illustrative feature extraction process 300 preprocesses individual segments to remove certain noise-like pixels. For example, FIG. 16 presents several segments of the character string ky. If the illustrative feature identification technique is applied directly to these segments, some undesired features will be extracted due to groups of noise-like pixels as indicated in FIG. 17 by labels a-f.

Current US Original Classification (1):  
382/177

Current US Cross Reference Classification (1):  
382/228

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWIC	Draw Desc	Image
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☐ 63. Document ID: US 5638465 A

L3: Entry 63 of 84

File: USPT

Jun 10, 1997

DOCUMENT-IDENTIFIER: US 5638465 A

TITLE: Image inspection/recognition method, method of generating reference data for use therein, and apparatuses therefor

Brief Summary Text (8):

To implement the above-described image or visual inspection methods, it is important what image features are to be extracted (an image feature extraction method), which image feature is to be used (an image feature selection method) and how the selected image feature is to be used (a matching method).

Current US Original Classification (1):  
382/281

Current US Cross Reference Classification (1):  
382/159

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWIC	Draw Desc	Image
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☐ 64. Document ID: US 5619593 A

L3: Entry 64 of 84

File: USPT

Apr 8, 1997

DOCUMENT-IDENTIFIER: US 5619593 A

TITLE: Method for extracting object images and method for detecting movements thereof

Brief Summary Text (43):

Another object of the present invention is to provide a method for detecting a gradient of an object image color field, wherein a concept of an "object color field" formed by a color of an object and the shape and the size of the color region is utilized, a gradient of the "object color field" is detected and wherein, even if a plurality of important color regions or objects are present, an object considered as being most important is selected, and a gradient of the "object color field" directed towards the selected object is detected.

Current US Original Classification (1):  
382/199Current US Cross Reference Classification (1):  
382/157Current US Cross Reference Classification (2):  
382/203Current US Cross Reference Classification (3):  
382/291

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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K00C	Draw Desc	Image
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☐ 65. Document ID: US 5604823 A

L3: Entry 65 of 84

File: USPT

Feb 18, 1997

DOCUMENT-IDENTIFIER: US 5604823 A

TITLE: Method for extracting object images and method for detecting movements thereof

Brief Summary Text (43):

Another object of the present invention is to provide a method for detecting a gradient of an object image color field, wherein a concept of an "object color field" formed by a color of an object and the shape and the size of the color region is utilized, a gradient of the "object color field" is detected and wherein, even if a plurality of important color regions or objects are present, an object considered as being most important is selected, and a gradient of the "object color field" directed towards the selected object is detected.

Current US Original Classification (1):  
382/199Current US Cross Reference Classification (1):  
382/156Current US Cross Reference Classification (2):  
382/165

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWNC	Draw Desc	Image
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☐ 66. Document ID: US 5604820 A

L3: Entry 66 of 84

File: USPT

Feb 18, 1997

DOCUMENT-IDENTIFIER: US 5604820 A

TITLE: Method for extracting object images and method for detecting movements thereof

Brief Summary Text (43):

Another object of the present invention is to provide a method for detecting a gradient of an object image color field, wherein a concept of an "object color field" formed by a color of an object and the shape and the size of the color region is utilized, a gradient of the "object color field" is detected and wherein, even if a plurality of important color regions or objects are present, an object considered as being most important is selected, and a gradient of the "object color field" directed towards the selected object is detected.

Current US Original Classification (1):

382/190

Current US Cross Reference Classification (1):

382/157

Current US Cross Reference Classification (2):

382/199

Current US Cross Reference Classification (3):

382/203

Current US Cross Reference Classification (4):

382/291

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWNC	Draw Desc	Image
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☒ 67. Document ID: US 5559902 A

L3: Entry 67 of 84

File: USPT

Sep 24, 1996

DOCUMENT-IDENTIFIER: US 5559902 A

TITLE: Method for enhancing connected and degraded text recognition

Detailed Description Text (52):

Prior to feature identification, the illustrative feature extraction process 300 preprocesses individual segments to remove certain noise-like pixels. For example, FIG. 16 presents several segments of the character string ky. If the illustrative feature identification technique is applied directly to these segments, some undesired features will be extracted due to groups of noise-like pixels as indicated in FIG. 17 by labels a-f.

Current US Original Classification (1):

382/263

Current US Cross Reference Classification (1):

382/262

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWIC	Draw Desc	Image
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☐ 68. Document ID: US 5548661 A

L3: Entry 68 of 84

File: USPT

Aug 20, 1996

DOCUMENT-IDENTIFIER: US 5548661 A

TITLE: Operator independent image cytometer

Detailed Description Text (20):

Real-time histogram and feature extraction capabilities of the image processor 110 (FIG. 1) are important for timely operation of the cytometer 100. The histogram array (not shown), generated by the HF 134 in histogram mode, is an array containing the number of pixels in the image at each intensity (e.g., for an 8-bit pixel, gray-scale image, the intensity range is 0, representing minimum intensity, to 255, representing maximum intensity). The histogram can be used for intensity statistics. For example, obtaining the average and standard deviation in the image for the purpose of autofocus. In feature extraction mode, the HF 134 provides an organized array of all pixels at defined sets of intensities. As will be further discussed below, the groups of pixels or "streaks" are compressed by the HF 134 using the well-known method of run-length encoding (RLE). The Series 151 is programmed by writing to registers on the processing boards. A set of higher level routines is provided by the Series 151 Library.

Current US Original Classification (1):382/133Current US Cross Reference Classification (2):382/129Current US Cross Reference Classification (3):382/260

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWIC	Draw Desc	Image
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☐ 69. Document ID: US 5515189 A

L3: Entry 69 of 84

File: USPT

May 7, 1996

DOCUMENT-IDENTIFIER: US 5515189 A

TITLE: Neural network device and image recognition method employing photoconductive liquid crystal device with patterned electrode

Brief Summary Text (9):

Accurately and quickly extracting features peculiar to the image is essential to improving the recognition performance of an optical neural network.

Current US Cross Reference Classification (3):382/159Current US Cross Reference Classification (4):382/260Current US Cross Reference Classification (5):

382/304

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWMC	Draw Desc	Image
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☐ 70. Document ID: US 5511134 A

L3: Entry 70 of 84

File: USPT

Apr 23, 1996

DOCUMENT-IDENTIFIER: US 5511134 A

TITLE: Image recognition device and image recognition method

Brief Summary Text (9):

Feature extraction is important process whereby the feature needed to recognize an image is obtained. The features are the reference for character recognition. Therefore, the recognition performance of the neural network depends on the quality of the features.

Current US Original Classification (1):382/158Current US Cross Reference Classification (1):382/203Current US Cross Reference Classification (2):382/205

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWMC	Draw Desc	Image
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☐ 71. Document ID: US 5406501 A

L3: Entry 71 of 84

File: USPT

Apr 11, 1995

DOCUMENT-IDENTIFIER: US 5406501 A

TITLE: Method and device for use in detecting moving targets

Detailed Description Text (6):

It is possible to create differential images (a) by subtracting corresponding pixels (i,j) (e.g.,  $D_{sub.n}(i,j) = R_{sub.n-1}(i,j) - R_{sub.n-1}(i,j)$ ) from pairs of images, or using differences in which corresponding pixels from more than two images are combined. Because it is desirable to detect objects, or targets which are bright, against a black, or at least a darker background, no negative values will be used in determining the differential images. This can be achieved by (a) taking (i) the absolute values or (ii) the sum of the squares of the differences used in producing the differential images, or (b) using positive values of the differential images.

Current US Cross Reference Classification (3):382/104Current US Cross Reference Classification (4):382/291

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWMC	Draw Desc	Image
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☐ 72. Document ID: US 5287193 A

L3: Entry 72 of 84

File: USPT

Feb 15, 1994

DOCUMENT-IDENTIFIER: US 5287193 A

TITLE: Parallel processing architecture of run-length codes

Brief Summary Text (8):

This invention may be also characterized in that it comprises a ripple counter for quickly acquiring the crossing count, which is defined as the total change times from white to black information, i.e., the total number of black runs, in a row of image data. The crossing count, which is an important parameter for image processing techniques, such as the segmentation and the feature extraction, is conventionally derived by software technology at a low processing rate.

Current US Original Classification (1):382/234Current US Cross Reference Classification (1):382/245Current US Cross Reference Classification (2):382/304

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWIC	Draw Desc	Image
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☐ 73. Document ID: US 5164994 A

L3: Entry 73 of 84

File: USPT

Nov 17, 1992

DOCUMENT-IDENTIFIER: US 5164994 A

TITLE: Solder joint locator

Brief Summary Text (5):

One of the primary goals of image processing is to automatically recognize certain features or textures within an image. In typical image processing systems, fields of picture elements (pixels) are automatically scanned, and some algorithm is chosen to analyze the image to recognize particular features. One approach is to arbitrarily select a given region, or window, in the image and to analyze the pixels within the window to detect the particular features. For example, one previous approach is to calculate a centroid, or weighted centroid, on all of the pixels within a window that are below a certain fixed threshold, where the desired feature is known to have an intensity below the threshold. This kind of approach, however, often causes adjacent objects, that are not sought to be detected, to add errors to the calculation when they fall below the threshold. In addition, often such thresholds must be set somewhat higher than desirable to account for variability in the desired features. This higher intensity threshold often can allow for even more errors from adjacent objects. Thus, it would be desirable to provide an image processor which is less prone to detect unwanted features adjacent to the desired features to more accurately analyze the desired features. In addition, it would be desirable to provide an image processor in which the threshold used to detect the features is adaptable to particular portions of the image, and not fixed. In this way the threshold may be set more closely approximate the intensity of the feature.

Current US Original Classification (1):382/150Current US Cross Reference Classification (2):

382/288

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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RWC	Draw Desc	Image
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☐ 74. Document ID: US 5097329 A

L3: Entry 74 of 84

File: USPT

Mar 17, 1992

DOCUMENT-IDENTIFIER: US 5097329 A

TITLE: Process for judging a runway

Detailed Description Text (5):

To process an image it is essential to extract a feature, e.g., a boundary line, etc. of an object from the image. One of the typical features on the image represents an edge. In this embodiment, for extracting an edge, an image is space-differentiated to detect the edge. The edge is detected at a position where a feature (generally gray level) abruptly changes, and the edge defines the boundary, i.e., contour of an object. To be specific, a white line i.e., a shoulder line of a road abruptly changes darkness on the image display, which permits the edge to be detected, and consequently a side of the road can be recognized.

Current US Cross Reference Classification (2):382/103Current US Cross Reference Classification (3):382/203

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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RWC	Draw Desc	Image
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☐ 75. Document ID: US 5093869 A

L3: Entry 75 of 84

File: USPT

Mar 3, 1992

DOCUMENT-IDENTIFIER: US 5093869 A

TITLE: Pattern recognition apparatus utilizing area linking and region growth techniques

Detailed Description Text (5):

The processing performed by the scene recognition system shown in FIG. 1 employs a series of transformations that converts image information into pregressively more compressed and abstract forms. The first transformation performed by the low level feature detector 11 converts the sensor image, which is an array of numbers describing the intensity at each picture position, into a more compact array of icons with attributes that described the essential intensity distributions of 10.times.10 pixel blocks of image data.

Current US Original Classification (1):382/199Current US Cross Reference Classification (1):382/103Current US Cross Reference Classification (2):382/226



Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWIC	Draw Desc	Image
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☐ 76. Document ID: US 4985618 A

L3: Entry 76 of 84

File: USPT

Jan 15, 1991

DOCUMENT-IDENTIFIER: US 4985618 A

TITLE: Parallel image processing system

Brief Summary Text (5):

In the aforementioned conventional image processing system for detecting a two dimensional image based on digital processing, the detection of slope of a line image, which is essential for recognition of the image, is performed by a number of image processing steps such as preliminary processing, feature extraction, pattern matching and the like. Such a processing is performed time sequentially on the basis of two dimensional image data stored in an image memory. Thus, the procedure is time consuming and needs a large memory space.

Current US Cross Reference Classification (1):382/107

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWIC	Draw Desc	Image
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☐ 77. Document ID: US 4903312 A

L3: Entry 77 of 84

File: USPT

Feb 20, 1990

DOCUMENT-IDENTIFIER: US 4903312 A

TITLE: Character recognition with variable subdivisions of a character region

Detailed Description Text (49):

Now, a further aspect of the present invention will be described with particular reference to FIGS. 21 through 30. This aspect of the present invention is particularly oriented to a character subdividing scheme suitable for use in feature extraction in a character recognition method and system. That is, it is important to subdivide a character image optimally depending on the condition of the character image to be subdivided so as to extract a desired feature without failure. FIG. 30a illustrates a code-assigned character image which has been obtained by assigning a set of directionality codes shown in FIG. 22 to the contour of a binary character image for a Japanese katakanta character "wu". And, FIG. 30b is a similar code-assigned character image for the same Japanese katakana character "wu" with slight modification in shape. First, let us consider the case in which both of these character images shown in FIGS. 30a and 30b are subdivided into a mesh of 3.times.3 using fixed locations of subdivisions and a histogram as a function of directionality codes for each of the subdivisions is formed to produce a feature vector.

Current US Original Classification (1):382/170Current US Cross Reference Classification (1):382/197

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KMNC	Draw Desc	Image
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☐ 78. Document ID: US 4780907 A

L3: Entry 78 of 84

File: USPT

Oct 25, 1988

DOCUMENT-IDENTIFIER: US 4780907 A

TITLE: Method of measuring the types of motion and configuration of biological and non-biological objects

Detailed Description Text (3):

In the method according to the invention, in contrast to all conventional image analysis methods, measurements are taken with the full picture, or frame, resolution by one or a plurality of video cameras 1 to 1", but the information content of the frames is reduced to the essential facts in the on-line process in that for each object to be detected per frame only one coordinate pair Xa, Ya; Xb, Yb; to Xn, Yn is stored. In most cases, the quantity of data is further reduced in that the frame raster 6 is made coarser by an integral multiple. Insofar as permitted by the problems to be solved, the quantity of data can be reduced even further by calling up a smaller number of frames per unit time, e.g. recording only every third or every fifth video frame.

Current US Original Classification (1):

382/107

Current US Cross Reference Classification (2):

382/128

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KMNC	Draw Desc	Image
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☐ 79. Document ID: US 4601055 A

L3: Entry 79 of 84

File: USPT

Jul 15, 1986

DOCUMENT-IDENTIFIER: US 4601055 A

TITLE: Image processor

Brief Summary Text (19):

As discussed above, an important feature of the processor of the invention is the provision of forward, recursive and backward paths to allow the image data to participate in temporal as well as spatial neighborhood operations. The backward pathway allows expectations or image models to be inserted into the system by the host machine, and to participate in processing in the same way as images acquired from the input stage device. The region-of-interest operator, which was mentioned above and is described in more detail below, is also an important feature in that it enables the results of feature-extraction processes to guide further image analysis. The processing system of the invention also provides a multi-resolution capability which enables global events to be made local, important feature in a machine having only local operators. These features, and other important features and advantages of invention, are best understood from the more detailed description found hereinbelow of the overall processing system, beginning with basic considerations and including specific processing examples.

Current US Original Classification (1):

382/303

Current US Cross Reference Classification (2):

382/308

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWMC	Draw Desc	Image
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☐ 80. Document ID: US 4399461 A

L3: Entry 80 of 84

File: USPT

Aug 16, 1983

DOCUMENT-IDENTIFIER: US 4399461 A

TITLE: Electronic image processing

Brief Summary Text (15):

Signal coring is most directly applied in image processing applications where the cored signal is provided by a set of high pass filters that is complementary to the low pass filter with which the set is associated. The regenerated signal thus formed from the combination of the cored high pass signal and the low pass signal substantially relates to but one pel of the array. If these filters are not complementary, some bands of frequencies may be omitted from the regenerated signal, or some bands of frequencies may be duplicated in the regenerated signal causing an undesirable increase in signal level within these duplicated bands. As a result, undesirable artifacts are developed in image locations corresponding to adjacent pels, e.g., forming unwanted lines adjacent the detected feature.

Current US Cross Reference Classification (2):

382/272

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWMC	Draw Desc	Image
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☐ 81. Document ID: US 4361830 A

L3: Entry 81 of 84

File: USPT

Nov 30, 1982

DOCUMENT-IDENTIFIER: US 4361830 A

TITLE: Device for displaying feature of contour image

Brief Summary Text (3):

Extraction of features such as bends, curves, recesses and protuberances from the contour of an image constitutes one important measure for the recognition of the shape of an article under examination.

Current US Original Classification (1):

382/199

Current US Cross Reference Classification (2):

382/203

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWMC	Draw Desc	Image
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☐ 82. Document ID: US 3638188 A

L3: Entry 82 of 84

File: USPT

Jan 25, 1972

DOCUMENT-IDENTIFIER: US 3638188 A

TITLE: CLASSIFICATION METHOD AND APPARATUS FOR PATTERN RECOGNITION SYSTEMS

Detailed Description Text (12):

Clearly, the consideration is also present that the smallest number of features that will serve to classify a pattern, within allowable tolerances, is much to be desired. Therefore, some restrictions may be placed upon the formation of features about image points, based upon practical considerations such as their separation. However, each extracted feature contributes individually to the classification of a particular pattern, and thus some redundancy is available, and desirable to maintain, to assure reliable classification despite the effects of partial obscuration or obliteration of the image.

Current US Original Classification (1):382/225Current US Cross Reference Classification (1):382/201Current US Cross Reference Classification (2):382/204

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KMIC	Draw Desc	Image
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☐ 83. Document ID: US 3636513 A

L3: Entry 83 of 84

File: USPT

Jan 18, 1972

DOCUMENT-IDENTIFIER: US 3636513 A

TITLE: PREPROCESSING METHOD AND APPARATUS FOR PATTERN RECOGNITION

Brief Summary Text (14):

Having determined these image points, the number of which will depend at least in part upon the complexity of the image under consideration, the points are taken in combinations of two or more, the geometry relating the points is established, and the observed characteristics are related to this geometry. The observed characteristics, together with the geometrical relationship between the image points, constitute the features to be extracted from the image, and it is essential to the method of the invention that the characteristics be selected so as to be invariant relative to the scale, orientation, and position of any patterns with which they are associated. A line emanating from an image point in a specific pattern, for example, has an orientation that is invariant with respect to an imaginary line joining that image point with a second image point in the same pattern regardless of the position, orientation, or scale of the pattern in the image. On the other hand, the orientation and scale of the imaginary line joining two such image points is directly related to the orientation and scale of the pattern to which it belongs. Furthermore, the lines connecting other pairs of image points in the same pattern will have a fixed orientation and scale with respect to the first line, regardless of the orientation and scale of the pattern in the image. Advantage is taken of these factors in comparing sets of observed image features with sets of reference features for particular classes which are stored in the machine. It is important to note that the present invention does not depend upon the existence and/or the advance knowledge of a specific pattern in the image under consideration; nor is it necessary that a pattern be selected for analysis. Rather, the preprocessing method of the invention is concerned only with the selection of features within the image, in a manner to be described, for subsequent determination of whether those features define a known pattern.

Detailed Description Text (12):

Clearly, the consideration is also present that the smallest number of features that will serve to classify a pattern, within allowable tolerances, is much to be desired. Therefore, some restrictions may be placed upon the formation of features about image points, based upon practical considerations such as their separation. However, each extracted feature contributes individually to the classification of a particular pattern, and thus some redundancy is available, and desireable to maintain, to assure reliable classification despite the effects of partial obscuration or obliteration of the image.

Current US Original Classification (1):382/204Current US Cross Reference Classification (1):382/224

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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K/M/C	Draw	Desc	Image
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☐ 84. Document ID: JP 63292286 A

L3: Entry 84 of 84

File: JPAB

Nov 29, 1988

DOCUMENT-IDENTIFIER: JP 63292286 A

TITLE: CHARACTER RECOGNIZING DEVICE

Current US Cross Reference Classification (1):382/181Abstract (2):

CONSTITUTION: A character string segmenting part 3 is provided to segment a character string image out of the image obtained by an image input part 1 and to be recognized together with a character segmenting part 5 which segments a character pattern out of a character string image to be recognized, an undesired image eliminating part 4 which deletes the characters and character strings set adjacent to the boundary between the image areas, a feature extracting part 6 which obtains the character features of the character pattern to be recognized, and a sorting part 7 which compares the character features obtained by the part 6 with the feature value of each character stored previously in a dictionary 8 and defines the most similar characters as the result of recognition. Thus the part 4 functions to remove the characters and character strings set adjacent to the peripheral boundary of areas to be recognized out of the objects of recognition. As a result, the insignificant result of recognition is never produced.

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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K/M/C	Draw	Desc	Image
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